Eberline Analytical
Oak Ridge Laboratory
Management Procedure

MP-001

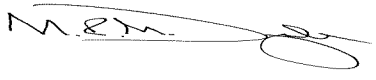
Sample Receiving

AUTHORIZATION AND APPROVAL STATEMENT

This **Eberline Analytical** - Oak Ridge Laboratory Management Procedure,
Sample Receiving
is authorized and approved in its entirety by:

Saba Arnold
Quality Assurance Manager

Date: October 31, 2012



Michael R. McDougall
Laboratory Manager

Date: October 31, 2012

1.0 PURPOSE AND SCOPE

1.1 The purpose of this procedure is to provide specific instruction regarding the receipt and control of client samples under a chain of custody. The sample custodian (SC) or designee will perform the directives that follow. The scope of this procedure is:

1.1.1 To provide instructions regarding how to initiate and maintain samples under chain of custody through the laboratory

1.1.2 To ensure that all samples received by Eberline Oak Ridge Laboratory are properly accepted, inspected, and processed prior to log-in and analysis

2.0 POLICY

Samples are physical evidence and must be handled according to specific procedural safeguards to insure the integrity of their custody. Eberline Analytical Services - Oak Ridge maintains a secure storage area within the laboratory for all samples. The scope of this procedure is to list the different protocols employed at the Eberline Analytical Services – Oak Ridge Laboratory facility.

It is Eberline Services – Oak Ridge Laboratory policy that:

- The laboratory responsibility starts from the time samples are received at the laboratory.
- If requested, the laboratory supply the types of containers specified in 40 CFR 141.23, Tables II-6 and VI-2. For radiochemistry, this includes polycarbonate containers of various sizes and configurations for soil and liquids, cubitainers for large volumes of liquids, and amber glass jars for tritium samples.
- If requested, the laboratory advises the client on the appropriate quantity of a sample needed for a particular analysis. However; sample locations, types of samples collected, and the quantity are determined by the client.
- Sample identification shall be affixed to each sample container.
- Samples must be accompanied by a chain of custody record. The record must identify each sample with a unique number, number of container, and the type of analysis requested.
- Samples must be packaged in a manner that prevents leakage, breakage, or cross contamination.
- Samples may be delivered to the laboratory by a personal carrier.
- Sample containers must be transported to the laboratory in accordance to the Department Of Transportation rules and regulation as defined in the Code of Federal Regulations CFR 49, Subtitle B, Chapter I, Parts 100 to 185.

3.0 SUMMARY OF METHOD

3.1 Upon delivery of a shipment from a client, the carrier's bill of lading or delivery documentation is checked to assure that the shipment is complete. The samples are surveyed for radioactivity and segregated if necessary using acceptance criteria as defined in this procedure. Sample shipments are then taken to a secure area for sample login and processing. Samples are unpacked and radiological contamination control surveys are conducted and documented for each sample. Sample identifications are checked against the client's chain of custody for accuracy and completeness. The pH of water samples is checked to ensure proper preservation. If there is any off normal occurrence, a Laboratory Discrepant Sample Receiving Report is generated and the client is immediately notified. All information

regarding actions or communications including specific instructions, persons contacted, and any additional information is documented on this form.

3.2 Specific parameters relating to the work order are entered into the LIMS. The LIMS designates a unique Work Order number for each group of samples (not to exceed 16 or 17 samples). Bar code label(s) (that include the work order number and fraction) and log-in sheets are generated. The labels are affixed to the respective sample bottle(s) and the log-in sheets are used to generate the project file that includes all COC records and sample receipt forms. The file is submitted to the PM for review.

3.3 Upon review and approval of the initial log-in process, an Internal Chain of Custody (ICOC) is initiated by the LIMS. The ICOC documents receipt and release of samples at all points in the sample flow throughout the laboratory. The samples are stored in assigned locations within the secure area of the laboratory (key entry).

4.0 RESPONSIBILITIES

4.1 The Sample Custodian is responsible to:

4.1.1 Perform radiological screening and segregate samples if necessary.

4.1.2 Ensure that all chain-of-custody sheets are signed by an Eberline Analytical Services - Oak Ridge laboratory representative.

4.1.3 Transfer the completed chain-of-custody to the appropriate project file(s).

4.1.4 Designate a specific location within the secured sample storage area for the received sample. Control the access to secured storage and designate an alternate custodian for absences.

4.2 Data management personnel initiate the internal chain of custody to monitor the flow of samples through the laboratory.

5.0 INTERNAL CHAIN OF CUSTODY

Upon the completion of the sample log in process, an Eberline Analytical Services "Oak Ridge Laboratory Internal Chain of Custody" is initiated by the Laboratory Management Information System (LIMS). The ICOC documents receipt and release of samples at all points in the sample flow throughout the laboratory. An individual ICOC accompanies each sub-file and upon completion of analyses, is filed with the sub-file in the original work order file.

6.0 SAFETY

Laboratory chemical and general safety shall be conducted as required within *Eberline Analytical "Oak Ridge Laboratory, Chemical Hygiene/Health & Safety Plan," Latest Version*

Laboratory radiation safety shall be conducted as required within *Eberline Analytical "Radiation Protection Plan and Attachments," Latest Version*

Waste management and sample return shall be conducted as required within *Eberline Analytical "Waste Management Plan," Latest Version*

6.1 Housekeeping

6.1.1 All work areas shall be kept as clean as possible at all times and the entire work area shall be cleaned at the conclusion of each shift.

6.1.2 Minimize unnecessary items and clutter in the work area.

6.1.3 Promptly clean any spills that occur using the guidance contained in the Emergency Action Plan, Spill Response Procedure and support of the Radiation Safety Officer and Health and Safety Officer if necessary.

6.2 Clearly label all sample containers (beakers, bottles, c-tubes etc.) with the work order number, analysis fraction, and analyte identification information such as Total Sr , Iso-U , or some other recognizable wording.

6.3 Any labels that identify the hazards associated with a particular sample container at the time of receipt will remain affixed to that container AND to ALL subsequent sub sampling from, and disposal of, that container.

6.4 Dispose of all waste in the appropriate containers as directed by the Waste Management Plan.

6.5 Personal protective equipment for this procedure shall consist of a lab coat or protective apron, safety glasses or goggles and chemical resistant laboratory gloves.

7.0 DEFINITIONS

7.1 DSR – Discrepant Sample Report

7.2 MSDS - Material Safety Data Sheets

7.3 NIST - National Institute of Standards and Technology

7.4 LIMS - Laboratory Information Management System

7.5 SC – Sample Custodian

8.0 PROCEDURE

8.1 An Eberline Analytical Services representative will receive, and the shipper will relinquish the samples by signing, recording the date and noting the time on the record. The completed and signed COC will be retained in the project file.

8.2 Examine the shipping container(s) for:

- Condition of the shipping container (intact, leaking, etc.)
- Presence or absence of custody seal(s) on the shipping containers
- Presence or absence of air bills

8.3 If any containers are leaking, isolate and contain the substance to avoid any potential contamination within the working area. Notify the carrier, project manager, and the health physics technician. The technician will ensu re safety, assist in any cleanup, contain and control any potential release of radioactivity.

8.4 Ensure that the health physics technician has performed the daily instrument consistency check before collecting measurements on samples.

8.5 Perform a direct dose rate of the package before opening. If the dose rate is <25μr/hr, the package can be moved to the sample log-in area. If the dose rate is ≥25μr/hr, place the package in the designated area below the shipping/receiving table and notify the health physics te chnician. The technician will assist in the inspection of the package under controlled conditions.

8.6 If the package meets the dose rate criteria or is released by the HP technician, move the package to the sample receiving area.

8.7 All samples received are assu med to be hazardous.

- Don clean gloves before opening a shipping package. Open the shipping container. This work is performed in a hood .
- Always protect yourself using PPE and best work practices. Inspect the interior of the package for the integrity of each sample container and the paper work.
- Report any indication of damage or any problems using a Discrepant Sample Receipt Report form MP-001-1, or on a form provided by the client (i.e., USEPA Traffic Reports). The SC will check the items on form MP-001-2, Sample Receipt Checklist and record as appropriate.
- Report any indication of damage to the project manager and the health physics technician for assistance.

8.8 A chain of custody (COC) must accompany all samples received at the Labo ratory. Remove and inspect all documents, and record the following:

- Presence or absence of chain-of-custody records
- Presence or absence of air bills or bills of lading documenting the sample shipment

8.9 Collect a smear over the external surface of the individual shipping containers. Set the detector at the lowest setting (1X) on the multiplier, place the detector over the smear and count for one minute. If the smear has removable radioactive material above the following action levels, do not remove the containers and contact the health physics technician for assistance.

- 80 cpm for beta/gamma detection instruments
- 6 cpm for alpha detection instruments

8.10 Record the container condition, as appropriate, on MP -001-2, Sample Receipt Checklist. The SC is responsible for the following:

- Noting the condition of sample container (intact, broken, leaking, etc.)
- Noting the presence/absence of custody seals and sample tags on sample containers

8.11 Compare the following information sources to verify agreement between:

- Chain-of-Custody records
- Individual sample tags and labels
- Client forms

Document any discrepancies on a DSR report (Form MP -001-1) and resolve these with the project manager and/or client. The complete DSR report will be filed in the original work order file

8.12 Perform a direct measurement on each individual sample container, recording the maximum count per minute value on the Sample Receiving Data sheet in the LIMS (see step 8.16.11).

8.12.1 If beta/gamma activity is less than 100 counts per minute (cpm), place a blue sticke r on the container. This sample can be stored on a regular sample storage shelf.

8.12.2 If beta/gamma activity is greater than 100 cpm but less than 1000 cpm:

- Smear the exterior surface of the individual sample containers and count for one minute.
- If transfera ble activity is less than 80 cpm beta/gamma or 6 cpm alpha, mark the container as Radioactive Material and place a orange sticker on the container.
- This sample can be stored on a regular sample storage shelf.
- If transferable activity is greater than 80 cpm beta/gamma or 6 cpm alpha, the HP office must be notified immediately for direction in decontaminating the external surface of the bag or sample container

8.12.3 If beta/gamma activity is greater than 1000 cpm:

- Smear the exterior surface of the individual sample containers and count for one minute.
- If transferable activity is less than 80 cpm beta/gamma or 6 cpm alpha, mark the container as Radioactive Material and place an red sticker on the container.
- This sample must be stored in the Elevated Sample Ca binet (ESC).
- If transferable activity greater than 80 cpm beta/gamma or 6 cpm alpha is detected, the HP office must be notified immediately for direction in decontaminating the external surface of the bag or sample container.

8.13 Line the samples up in order by their COC. Check ID s, date, time, matrix, and analysis required.

8.14 Evaluation of pH of Incoming Aqueous Samples

Soil samples are not opened in sample receiving. Waters are opened to check the pH. To verify that samples are properly preserved, the acid concentration of aqueous samples will be checked upon receipt within a hood where possible.

8.14.1 Remove a small aliquot of the sample and evaluate by pH paper determination.

8.14.2 Check for reactivity prior to complete preservation of the sample. (Place a few drops of the sample in a small beaker and add concentrated Nitric acid.) If any reaction occurs, DO NOT PRESERVE THE SAMPLE.

8.14.3 Adjust the pH by initially adding 5 ml of Nitric acid. Check the pH and if greater than 2, adjust to less than 2 by careful addition of Nitric acid. Record the lot number of the acid used.

8.14.4 If the sample arrives at the laboratory already preserved (pH<2), affix a sticker that states, Preserved with HNO_3 , if the sample is to be analyzed unpreserved, affix a sticker that states, Unpreserved , if the laboratory preserves the sample, affix a sticker that includes the following:

pH<2
5-mls conc. HNO_3
Date: _____
Initials: _____

8.15 **EXCEPTIONS:** Do not preserve aqueous samples analyzed for Carbon 14, Tritium, Iodine, TSS/TDS, or when the analysis is on the filtered fraction. Additionally, the analytical technician must consult the Technical Director if the samples have an odor or an oily matrix, or if the sample is reactive, i.e. contains a reactive substance or element.

NOTE

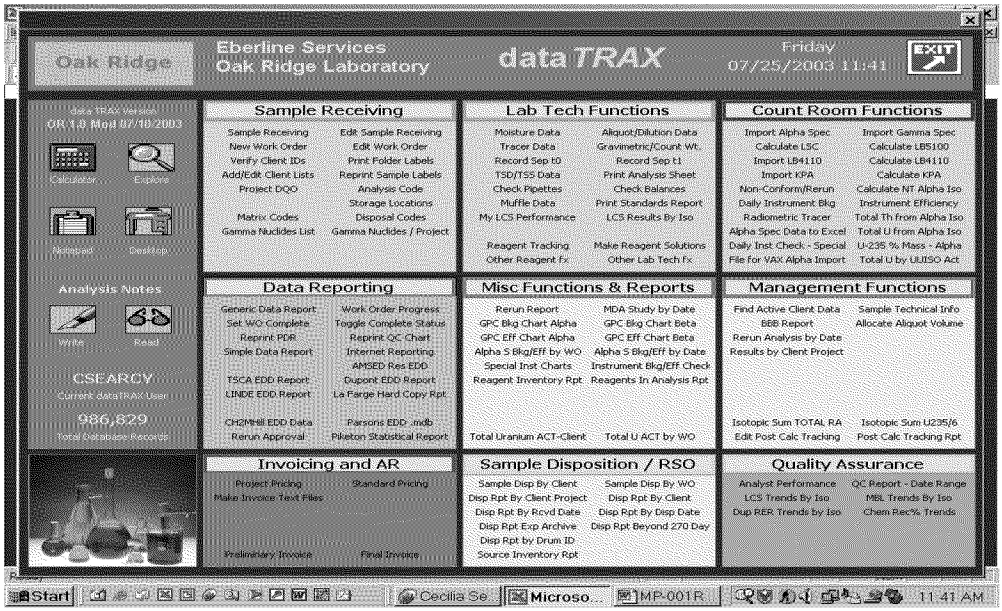
Upon receipt and client specific request, samples can be preserved by Eberline Services.

8.16 Designate a unique Work Order number for each group of samples (not to exceed 16 or 17 samples). To designate the unique Work Order number, follow steps 8.16.1 – 8.16.12.

8.16.1 Access DataTrax

8.16.2 Select All User Functions

8.16.3 Select Sample Receiving in the Sample Receiving block



8.16.4 Select the client company

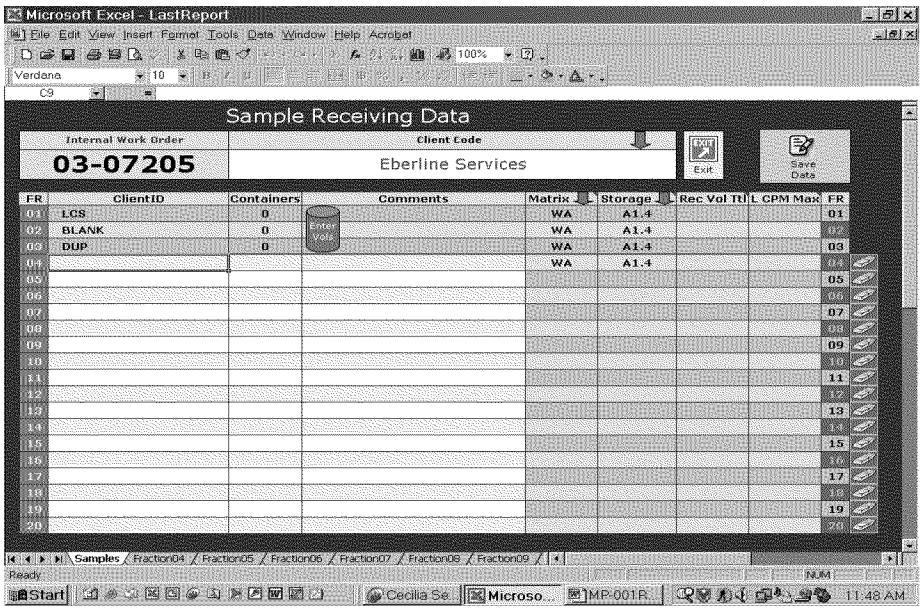
8.16.5 Select sample matrix

8.16.6 Select storage location

8.16.7 Enter the sample ID(s)

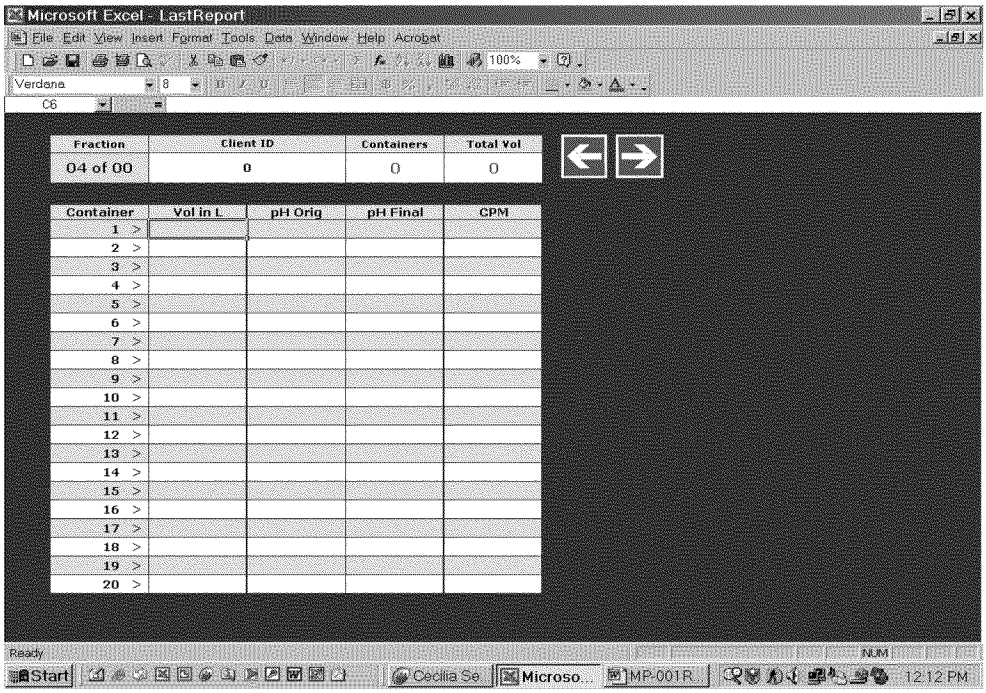
8.16.8 Enter the number of containers per sample

8.16.9 Enter any comments



8.16.10 The next unique work order number is assigned by the LIMS.

8.16.11 Select the orange barrel to enter the sample volume, initial and final pH obtained from step 8.14, and maximum count per minute reading from step 8.12



8.16.12 When the data is saved, the bar code label (s) and log-in sheets are printed

8.17 Affix the label(s) to the respective sample bottle(s).

8.18 Create a project file upon completion of the log -in process according to the following designations:

Blue File: 0-14 day turn around time - Level II or IV
Manila File: 15 day or greater turn around time Level II
Yellow File: 15 day or greater turn around time Level IV
Red File: any turn around time if one or more samples are elevated (have an orange sticker)

8.19 Label each sample with the work order number, fraction num ber, and shelf location and record.

8.20 Place all COC records and sample receipt forms, including form MP -001-3 Laboratory Data Support Checklist, into the file. The file will be submitted to the Laboratory Project Manager for review.

8.21 Upon the completion of th e sample log in process, an Eberline Services Oak Ridge Laboratory Internal Chain of Custody is initiated by the Laboratory Management Information System (LIMS). The ICOC documents receipt and release of samples at all points in the sample flow through out the laboratory. An individual ICOC accompanies each sub-file and upon completion of analyses is filed with the sub-file in the original work order file.

8.22 If client samples are forwarded to another organization or split with a facility and/or government agency, a separate COC is prepared for those samples and marked to indicate with whom the samples are being split. A copy of this COC will also be maintained on file.

9.0 WASTE MANAGEMENT AND POLLUTION PREVENTION

9.1 All excess sample materials, extracts, byprodu cts, and associated waste will be disposed of in the appropriate containers and segregated into the appropriate waste streams for final disposal according to the Waste Management Plan.

9.2 All laboratory activities associated with this procedure will be carrie d out in the fashion designed to generate the least amount of waste possible and still achieve the necessary quality of data.

Illustration 1

EBERLINE SERVICES Oak Ridge Laboratory	Internal Chain of Custody	Work Order #	01-11101
		Lab Deadline	11/23/01
		Analysis	ISO-U
		Sample Matrix	Soil

Comments	Sample Fraction	HP 216 / 276 Detector Activity	Storage Location
	04	<60	A1.1
	05	68	A1.1

	Location (circle one)					Technician Initials	Date
Received by	Sample Storage (circled)	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

Eberline Services Oak Ridge Laboratory

DISCREPANT SAMPLE RECEIPT REPORT
MP-001-1

WORK ORDER :
CUSTOMER:
DATE RECEIVED:
MATRIX:
PROBLEM:
ACTION TAKEN:
CLIENT NOTIFIED: **DATE** **INITIALS**
CLIENTCOMMENTS:

1. *Shipping papers not in order.*
2. *Custody papers absent.*
3. *Analyses not specified.*
4. *Samples physically damaged.*
5. *Samples not adequately identified.*
6. *Custody seals absent or broken.*
7. *Sample screen activity levels elevated.*
8. *Amount of sample less than that required for analyses.*
9. *Number of samples does not agree with chain-of-custody.*
10. *Identification of samples does not agree with chain-of-custody.*
11. *Sample analyses requested do not agree with paperwork.*
12. *Other (describe).*

SIGNATURE: _____ Date: _____ _____

Eberline Services Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # _____

SAMPLE MATRIX/MATRICES: (CIRCLE ONE OR BOTH)

AQUEOUS NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	Y	N	
If aqueous, properly preserved	Y	N	N/A

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	Y	N
Unbroken on outside of package?	Y	N
Present on samples?	Y	N
Unbroken on samples?	Y	N
Was chain of custody present upon sample receipt?	Y	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

_____

_____

_____

SIGNATURE: _____ DATE: _____

Eberline Services Oak Ridge Laboratory

LABORATORY DATA SUPPORT CHECKLIST

MP-001-3

Eberline Services Work Order #_____

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
				Sample Log-In
				Data Compilation
				First Technical Data Review
				Second Technical Data Review
				Data Entry/Electronic Deliverable
				Case Narrative
				Electronic Deliverable Proof
				Samples Analyzed within Holding Time Yes? ☐ No? ☐
				QA/QC Review
				Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by:

_____

Laboratory Manager Date